



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/473,137	12/28/1999	MATSUTARO MIYAMOTO	991517	9634

23850 7590 03/29/2002

ARMSTRONG, WESTERMAN & HATTORI, LLP
1725 K STREET, NW.
SUITE 1000
WASHINGTON, DC 20006

EXAMINER

VERDIER, CHRISTOPHER M

ART UNIT	PAPER NUMBER
----------	--------------

3745

DATE MAILED: 03/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/473,137	Applicant(s) MIYAMOTO ET AL.	
	Examiner Christopher Verdier	Art Unit 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1-25-02, 2-22-02.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,7,10-22 and 30-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,7,10-22 and 30-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 December 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☒ Some * c) ☐ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 10. 6) ☐ Other: _____

Art Unit: 3745

Applicants' Amendment dated January 25, 2002, along with the Verifying Declaration and English translation of Japanese Patent Applications 187681/1997 and 29160/1998 have been carefully considered but are deemed non-persuasive. Claims 1, 7, 10-22, and 30-37 are pending, with claims 33-37 being newly added. Applicants have not pointed out what they believe to be the patentable novelty of newly submitted claims 33-37. See MPEP 714.04, 714.02, and 37 CFR 1.111.

The new abstract overcomes the objection thereto set forth in the first Office action. The specification has been amended to overcome the informality noted in the first Office action. Claims 10-12 and 21 have been amended to overcome the improper multiple dependencies set forth in the first Office action. Correction of the above matters is noted with appreciation.

With regard to the certified translations of Japanese Patent Applications 187681/1997 and 29160/1998, Applicant has argued that independent claims 1 and 16 are fully supported by these priority applications. The examiner disagrees because independent claims 1 and 16 recite that direct impact transmission is prevented from the stator assembly to the casing portion. Neither of the above priority documents support this feature; although the figures thereof show grooves 42, 44 for the stator vane spacers 32 to move into during abnormal torque being applied from the rotor to the stator, when the spacers move into the grooves, they will directly impact the casing portion. Therefore, Japanese Patent 11-62,879 is not removed as a reference under 35 USC 102(e).

With regard to Japanese Patent 61-25,994, Applicant has argued that the Office misinterprets reference numeral 27 as a casing, an impact absorbing member, with the impact absorbing member functioning as a temperature adjusting mechanism that cools the stator, with the impact absorbing mechanism comprising an inner casing surrounding the vane pumping section. Applicants have further argued that reference numeral 27 thereof is merely a vessel without any regard of being an impact-absorbing member without any of the above attributes. Applicants have also argued that abnormal torque is directly transmitted to the casing thereof through stator vanes 16, spacers 24, and the fixing portions, and that the vessel 27 is located outside spacers 24, and is not provided in the torque transmission path. These arguments are not persuasive because any element located between the stator and the casing will function as an impact-absorbing member. Note that the terminology in a pending application's claims is to be given its broadest reasonable interpretation (*In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989)) and limitations from a pending application's specification are not to be read into the claims (*Sjolund v. Musland*, 847 F.2d 1573, 1581-82, 6 USPQ2d 2020, 2027 (Fed. Cir. 1989)). Because element 27 is located between the stator 11 and the casing, and because element 27 has inlet ports 26 attached to the casing, any impact between the stator to the casing will be absorbed because the stator will never be in direct contact with the casing 27, thereby preventing direct impact transmission from the rotor to the stator. The interior of element 27 is considered to be the partial clearance between the stator assembly and the casing is shown as the wall that reference numeral 27 points to. Note however, that the outermost casing radially outward of element 27 may also be considered as the casing.

Art Unit: 3745

With regard to Japanese Patent 57-212,395, Applicants have argued that because the inner casing 11 is fixed to the inwardly projecting flange of the casing 4 and the support flanges 12, 13, impact force of a broken rotor colliding with the stator blades 3 and fixing members for fixing the stator blades 3 will be transmitted to the casing 4 directly. These arguments are persuasive.

With regard to Stones, Applicants have argued that Stones does not disclose that direct impact transmission is prevented from the stator to the casing as recited in amended claim 16. This argument is persuasive.

With regard to U.S. Patent Application Publication U.S. 2001/0016160 A1, Applicants have argued that independent claims 1 and 16 are believed to be supported by Japanese Patent Applications 187681/1997 and 29160/198. This argument is not persuasive for the reasons set forth above.

Specification

The disclosure is objected to because of the following informality: Appropriate correction is required.

The patent number for application 09/104,171 should be provided on page 1, line 2 of the specification.

Art Unit: 3745

Claim Objections

Claims 16-22, 30-34, and 37 are objected to because of the following informalities:

Appropriate correction is required.

In claim 16, line 7, "," should be deleted.

In claim 37, line 4, "." should be deleted.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 33-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 33-34 are incomplete as they omit essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are a rotating element or a bearing element which would cause the stator assembly to be rotated by abnormal torque. Claims 33-34 set forth no elements to allow the stator assembly to be rotated by abnormal torque.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 3745

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1, 13-14, and 16-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Japanese Patent 11-62,879 (figures 1-2). Note the turbomolecular pump having stator 4 surrounding rotor 6, casing 1/16, with a clearance 27 being formed between the stator and casing so that when abnormal torque is applied from the rotor to the stator, direct impact transmission is prevented from the stator to the rotor. Note impact-absorbing member 22 between the stator and casing, with the stator having a multiple structure comprising stator vanes. The stator and rotor comprise a vane pumping section, and the impact absorbing structure comprises an inner casing surrounding the vane pumping section, with the inner casing being fixed by fitting part of an inner surface of the inner casing to a cylindrical portion of the casing 16.

Claims 1, 13-15, 16-19, 21, and 31-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent 61-25,994 (figure 1). Note the turbomolecular pump having stator 11 surrounding rotor 13, the casing 27, with a clearance being formed between the stator and casing so that when abnormal torque is applied from the rotor to the stator, direct impact transmission is prevented from the stator to the rotor. Note impact-absorbing member 27

Art Unit: 3745

between the stator and casing, with the stator having a multiple structure comprising stator vanes

16. The impact-absorbing member is provided between the stator in the vane pumping section and the inner casing. The impact-absorbing member also functions as a temperature adjusting mechanism that cools the stator. The stator and rotor comprise a vane pumping section, and the impact absorbing structure comprises an inner casing surrounding the vane pumping section, with the inner casing being fixed by fitting part of an inner surface of the inner casing to a cylindrical portion of the stator.

Claims 1, 7, 10-14, and 16-17, 19, 20/17, 20/19, 21, and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication U.S. 2001/0016160 A1. Concerning claims 1, 7, and 13-14, note in figures 1-2 the turbomolecular pump having stator 32/38a surrounding rotor 12, casing 14a, with a clearance 42 being formed between the stator and casing so that when abnormal torque is applied from the rotor to the stator, direct impact transmission is prevented from the stator to the rotor. The stator may include a groove pumping section. Note impact absorbing member 38a between the stator and casing, with the stator having a multiple structure comprising stator vanes. Concerning claims 16-17, 19, 20/17, 20/19, and 30, note in figures 5-13 the turbomolecular pump having stator 50 surrounding rotor 12, the casing 14, vane pumping section 32, and impact absorbing structure 58/80a/80b. The impact absorbing structure comprises an inner casing surrounding the vane pumping section and is a friction reducing member, in the form of a low friction rotatable sleeve 58 or ball bearings 80a/80b, and rotatably supports the stator. The impact-absorbing member is provided between

Art Unit: 3745

the stator in the vane pumping section and the inner casing. The vane pumping assembly is attached to the casing by way of the friction reducing member.

Claims 35 and 37 are rejected under 35 U.S.C. 102(e) as being anticipated by Okamura (figure 1). Note the turbomolecular pump having casing 1 housing stator 4/20 and rotor 6, vane pumping section 5 and groove pumping section 9 comprised by the stator and rotor, and temperature adjusting mechanism 21 provided between a downstream side of the vane pumping section 5 and an upstream side of exhaust port 3. Note sealing member 23 provided between the stator of the groove pumping section and the casing portion.

Claim 36 is rejected under 35 U.S.C. 102(b) as being anticipated by Nishiuchi (figure 1). Note the turbomolecular pump having casing portion 40 housing stator 2 and rotor 1, vane pumping section 9 comprised by the stator and rotor, and sealing member 41 provided between the stator of the vane pumping section and the casing portion.

Claim 36 is also rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent 62-29,796 (figure 1). Note the turbomolecular pump having casing portion 1a housing stator 3b/unnumbered and rotor 8a, the unnumbered vane pumping section comprised by the stator and rotor, and the unnumbered sealing member in the form of a o-ring provided between the stator of the vane pumping section and the casing portion.

Art Unit: 3745

Claim 36 is also rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent 63-223,394 (figure 1). Note the turbomolecular pump having casing portion 2 housing stator 4/5 and rotor 1, the vane pumping section 3 comprised by the stator and rotor, and the unnumbered sealing member in the form of a o-ring provided between the stator of the vane pumping section and the casing portion.

Claim 37 is also rejected under 35 U.S.C. 102(b) as being anticipated by Deters (figures 1 and 3). Note the turbomolecular pump having casing portion 1/11 housing stator 14 and rotor 7, groove pumping section 6 comprised by the stator and rotor, and sealing member 16/33/34 provided between the stator of the groove pumping section and the casing portion.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

Art Unit: 3745

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claim 7 is also rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 61-25,994 in view of Miki. The Japanese Patent 61-25,994 discloses a turbomolecular pumps substantially as claimed as set forth above, but do not disclose that the stator assembly includes a groove pumping section spacer.

Miki (figure 2) shows a turbomolecular pump having a groove pumping section spacer 7 with grooves 7a therein as part of the pumping section, for the purpose of increasing compression.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the turbomolecular pump of Japanese Patent 61-25,994 such that the stator assembly includes a groove pumping section spacer, as taught by Miki, for the purpose of increasing compression.

Claim 20/18 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication U.S. 2001/0016160 in view of Japanese Patent 11-62,879. U.S. Patent Application Publication U.S. 2001/0016160 discloses a turbomolecular pump substantially as

Art Unit: 3745

claimed as set forth above, including a friction reducing mechanism 58 located between the inner casing and the stator or casing, but does not disclose that a clearance is provided between the inner casing and the casing.

Japanese Patent 11-62,879 (figures 1-2) shows a turbomolecular pump having a stator 4 surrounding a rotor 6, a casing 1/16, and a clearance 27 formed between the stator and casing, so that when abnormal torque is applied from the rotor to the stator, direct impact transmission is prevented from the stator to the rotor.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the turbomolecular pump of U.S. Patent Application Publication U.S. 2001/0016160 such that a clearance is provided between the inner casing and the casing, as taught by Japanese Patent 11-62,879, for the purpose of preventing direct impact transmission from the stator to the rotor when abnormal torque is applied from the rotor to the stator.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 61-25,994 in view of Schutz. Japanese Patent 61-25,994 discloses a turbomolecular pump substantially as claimed as set forth above, but do not disclose that the casing portion is comprised of a high thermal conductivity material.

Schutz (figure 2) shows a turbomolecular pump having a casing 2 made of aluminum, which is known to be a high thermal conductivity material, for the purpose of providing good conduction of heat.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the turbomolecular pump of Japanese Patent 61-25,994 such that the casing portion is comprised aluminum, as taught by Schutz, for the purpose of providing good conduction of heat.

Claims 33-34, as far as they are definite, are rejected under 35 U.S.C. 103(a) as being unpatentable over either (Japanese Patent 11-62,879 or Japanese Patent 61-25,994 or U.S. Patent Application Publication U.S. 2001/0016160) in view of either (Japanese Patent 62-29796 or Japanese Patent 63-223,394). Japanese Patent 11-62,879 (figure 1) or Japanese Patent 61-25,994 (figure 1) or U.S. Patent Application Publication U.S. 2001/0016160 (figures 5-13) disclose turbomolecular pumps substantially as claimed as set forth above, including respective stator assemblies 4 and 24 and 50 which may be rotated by abnormal torque and respective unnumbered casing portions near 26 and 24 and 38/14 which are not rotated and are stationary, but do not disclose a sealing member located between the rotating and stationary portions.

Japanese Patent 62-29,796 (figure 1) shows a turbomolecular pump having casing portion 1a housing a stator 3b/unnumbered and rotor 8a, with an unnumbered vane pumping section comprised by the stator and rotor, and the unnumbered sealing member in the form of a o-ring

Art Unit: 3745

provided between the stator of the vane pumping section and the casing portion, for the purpose of providing a seal between the stator and the casing. Japanese Patent 63-223,394 (figure 1) shows a turbomolecular pump having casing portion 2 housing stator 4/5 and rotor 1, with a vane pumping section 3 comprised by the stator and rotor, and an unnumbered sealing member in the form of a o-ring provided between the stator of the vane pumping section and the casing portion, for the purpose of providing a seal between the stator and the casing.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the turbomolecular pump of either Japanese Patent 11-62,879 or Japanese Patent 61-25,994 or U.S. Patent Application Publication U.S. 2001/0016160 with a sealing member located between the rotating and stationary portions, as taught by either Japanese Patent 62-29796 or Japanese Patent 63-223,394, for the purpose of providing a seal between the stator and the casing.

Prior Art

Prior art made of record but not relied upon is considered pertinent to Applicant's disclosure and consists of one patent.

Japanese Patent 4-164,187 is cited to show a turbomolecular pump having a vane and a groove pumping section, with a heater downstream of the outlet port.

Art Unit: 3745

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

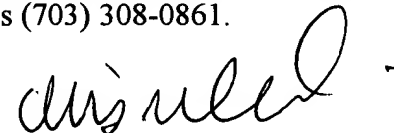
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (703)-308-2638. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (703) 308-1044. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0861.

C.V.
March 24, 2002


Christopher Verdier
Primary Examiner
Art Unit 3745